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(71)(72) Applicant and Inventor: KORSHAMN, Tor [NO/NO]; Plutokroken 10, N-4021 Stavanger (NO).

(74) Agent: STRAND, Svein, O.; Bryns Patentkontor A/S, P.O. Box 9566, Egertorget, N-0128 Oslo 1 (NO).

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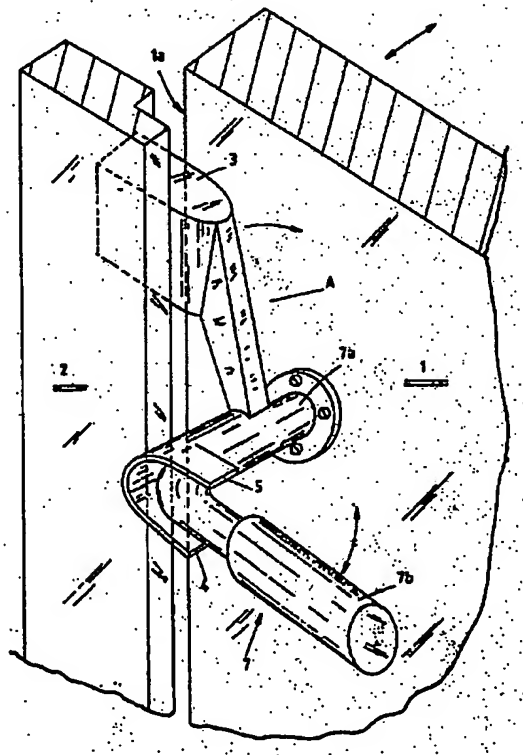
(54) Title: PINCH GUARD FOR MOUNTING ON DOORS

(57) Abstract

A pinch guard for mounting on doors to prevent or reduce injuries due to pinching between the door blade (1) and door frame (2) when the door is unintentionally closed, e.g., when a door is blown shut. The spacer element (3) is movably mounted on the side surface on the door (1) facing the door frame and at the side edge opposite the hinge edge of the door (1). The spacer member (3) is movable between active position where it projects out past the side edge (1a) of the door (1), and a passive position where it is contained entirely inside the side edge (1a) of said door (1). The spacer member is actuated by force in the direction toward its active position and may be manipulated from both sides of the door (1) with the aid of appropriate means, e.g., the door's handle (7).



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PINCH GUARD FOR MOUNTING ON DOORS.

The present invention relates to a pinch guard, a protective device for mounting on doors to prevent or reduce injuries due to pinching between the door and door frame when the door is unintentionally closed, e.g., when a door is blown shut, and of the nature disclosed in the preamble of the following independent claim 1.

A great many different devices are known for the prevention of pinch injuries caused by closing of doors. Generally, these have the common feature that the door hinges are designed to be capable of yielding to prevent pinch injuries between the door and the door frame on the hinge side of the door. Such injury may also be prevented by, for example, mounting a guard rail over the crack at the doorjamb to prevent children from inserting their fingers into this dangerous area. These various known solutions can be both expensive and complicated, and their use has not been particularly widespread.

The mentioned devices have no effect whatsoever in connection with prevention of pinch injuries at the door's free edge opposite the hinge edge.

From US patent no. 1,117,253 there is known a device for mounting on the free edge of the door opposite the hinge edge, designed to pivot out and come to rest between the door itself and the door frame with rapid closing of the door-- for example, when a door is blown shut -- in order to reduce the force of impact, and thereby also reducing noise. This device comprises a pivotably mounted arm on the door itself, having a pliable lower section, for example, a rubber body, which swings out on movement of the door as a result of the generated centrifugal force, so that said body comes to rest

between the door itself and the frame. The arm together with the stop member will then pivot back so that the door may be completely closed. Aside from reducing impact and noise, this device would also contribute toward prevention of pinch injuries at the free edge of the door itself, inasmuch as the spacer member prevents complete closure of the door when it is unintentionally and rapidly shut.

The purpose of the present invention is to provide a protective device against pinch injuries (a pinch guard) of a very simple construction, which will in all cases reduce the effect of pinch injuries to fingers that might come into the crack on the hinge side of the door, or on the opposite side thereto near the door handle, when the door is unintentionally closed, and where the pinch guard's spacer member will fulfill its purpose regardless of whether the door is closed rapidly or slowly.

This is achieved according to the present invention with the aid of the features disclosed in the characterizing clause of the following independent claim 1 and in the characterizing clause of the subsequent dependent claims.

We thus obtain a pinch guard that may readily be mounted on existing doors, and in a particular embodiment form the pinch guard designed with an undercut groove may be pressed in onto the shaft portion of the door handle whereupon it is ready for use.

The invention will be described in more detail in the following, in connection with three embodiment forms shown in the drawings.

Figure 1 shows in perspective a pinch guard constructed in one part, which may easily be pressed in to fasten securely to the shaft portion of the door handle,

Figure 2 shows in perspective a second embodiment form of the pinch guard, and

Figure 3 shows a third embodiment form of the pinch guard.

The pinch guard as shown in the above mentioned three figures comprises, in general, a spacer member 3 movably mounted on the side surface of a door 1, facing the door frame and at the side edge opposite the hinge edge of the door 1. The spacer member 3 is movable between an active position where it projects past the side edge 1a of the door 1, and a passive position where it is contained entirely inside the side edge 1a of the door 1. The spacer member 3 is actuated by force in the direction toward its active position and may be manipulated from both sides of the door 1 with the aid of appropriate means.

The spacer member 3 may be pivotably mounted as shown in figures 1 and 2 near or on the door 1, with the pivotable movement being limited by two stop means 4, 5; 4', 5' which define active and passive position. The spacer member extends outwardly from its mounting toward the side edge 1a of the door 1 and pivots as a result of the force of gravity from its upper passive position to its lower active position.

In its active position where it projects past the side edge 1a of the door 1, the spacer member 3 will, on unintentional closing of the door, remain situated between the door 1 and the door frame 2 and will thus prevent the door from slamming or closing tightly, as the spacer member 3 will cause a gap to remain between the side edge 1a of the door 1 and the door frame 2. The width of this gap may be determined by means of the thickness of the spacer member 3. This enables, at the same time, the provision of a gap between the side edge of the door 1 at the hinge edge and the door frame 2, whereby pinch injury to any fingers that might be found in said gap is prevented or reduced.

The pinch guard as shown in figure 1 comprises a spacer member 3 one end of which is formed with an undercut groove 6 extending crosswise thereto for pivotable engagement with the shaft portion 7a of the door's handle 7. At the end of the undercut groove 6 there are provided two striking surfaces constituting stop means 4,5 crosswise to the groove 6 above and below the grip member 7b of the door handle 7. The distance between the two stop means 4,5 permits some space between said means and the grip member 7b of the door handle 7, thereby allowing some play of movement whereby upon downward pressure on the grip member 7b, the spacer member 3 may be pivoted in from its active position when the door is being closed, while in its subsequent upward swing back to normal position -- and if the door is closed -- the grip member 7b does not press the spacer member 3 against the door frame 2.

This embodiment form of the pinch guard affords a very simple mounting thereof onto the shaft portion 7a of the door handle 7, involving quite simply pressing the undercut groove 6 onto the shaft portion 7a, where the pinch guard will be pivotably secured. The pinch guard may be manipulated from both sides of the door by pressing down the grip member 7b of the door handle 7.

In a second embodiment form of the pinch guard as shown in figure 2, where the spacer member 3 is still pivotably disposed, said spacer member 3 is pivotably mounted at point 9 on an arm 8 and at the same time forms an extension of said arm which projects from the shaft portion 7a of the door handle 7. On the arm 8 there are provided stop means 4', 5' for limiting the pivotable movement of the spacer member between active and passive position.

In this embodiment form, the arm 8 must be non-pivotably disposed on the shaft portion 7a of the door handle 7. By designing the arm's 8 fastening means for engagement with the

designing the arm's 8 fastening means for engagement with the shaft portion 7a, in various ways, this embodiment of the pinch guard may be mounted on a wide array of different door handles 7, ranging from door handles with rounded heads to handles with the most imaginatively configured grip members 7b.

In a third embodiment form of the pinch guard, as shown in figure 3, the spacer member 3' is slidably disposed in a guide means 10 attached to the door 1, between an active and a passive position, and is spring-actuated in the direction toward its active position, where the spacer member 3 projects past the side edge 1a of the door 1, thereby coming to rest against the door frame 2 upon unintentional closing of the door.

To manipulate the spacer member 3' from active to passive position, there is provided a carrier arm 11, secured to and projecting from the shaft portion 7a of the door handle 7 and in between two stop means 4'', 5'' on the spacer member 3'. The distance between the stop means corresponds to at least the sliding length for the spacer member 3' between passive and active position, together with the width of the end section 11a of the carrier arm 11.

With the present invention there is thus provided a pinch guard of a simple and robust construction that is easy and inexpensive to produce and simple to mount. By virture of the three different embodiment forms, the pinch guard may be used on all possible types of doors where the door itself is hinged.

Patent Claims

1.
A protective device against pinch injuries (a pinch guard) for mounting on doors to prevent or reduce injuries due to pinching between the door (1) and door frame (2) when the door is unintentionally closed, e.g., when a door is blown shut, comprising a spacer member (3; 3') movably mounted on the side surface of the door (1) facing the door frame (2) and at the side edge (1a) opposite the hinge edge of the door (1), which spacer member (3; 3') is movable between an active position where it projects past the side edge (1a) of the door (1), and a passive position where it is contained entirely inside the side edge (1a) of the door (1), which movement is limited by two stop means (4,5;4',5'; 4'',5'') which define active and passive position,
characterized in that said spacer member (3; 3') is actuated by force in the direction toward its active position, and may be manipulated from both sides of the door (1) with the aid of appropriate means.

2.
A pinch guard according to claim 1,
characterized in that one end of said spacer member (3) is formed with an undercut groove (6) extending crosswise thereto for pivotable engagement with the shaft portion (7a) of the door handle (7), and that at the end of the undercut groove (6) there protrude two striking surfaces constituting the stop means (4,5), crosswise to the groove (6) above and below the grip member (7b) of the door handle (7), and spaced slightly apart from said grip member (7b) thereby allowing some play of movement, whereby upon downward pressure on the grip member (7b) the spacer member (3) may be pivoted in from its active position when the door is being closed, while in its subsequent upward swing back to normal

position -- and if the door is closed -- said grip member 7b does not press the spacer member (3) against the door frame (2).

3.
A pinch guard according to claim 1,
c h a r a c t e r i z e d i n that said spacer member (3) is pivotably mounted (9) on and forms an extension of an arm (8) which projects from the shaft portion (7a) of the door handle (7), and that on the arm (8) there are provided stop means (4', 5') for limiting the pivotal movement of the spacer member (3) between active and passive position.

4.
A pinch guard according to claim 1,
c h a r a c t e r i z e d i n that said spacer member (3') is slidable in a guide means (10) between active and passive position, and is spring-actuated in the direction toward its active position.

5.
A pinch guard according to claim 4,
c h a r a c t e r i z e d i n that a carrier arm (11) projects radially out from the shaft portion (7a) of the door handle (7) and in between two stop means (4'', 5'') on the spacer member (3'), which two stop means are spaced apart at a distance corresponding to at least the sliding length between passive and active position, together with the width of the end section (11a) of the carrier arm (11), seen in the direction of displacement of the spacer member (3').

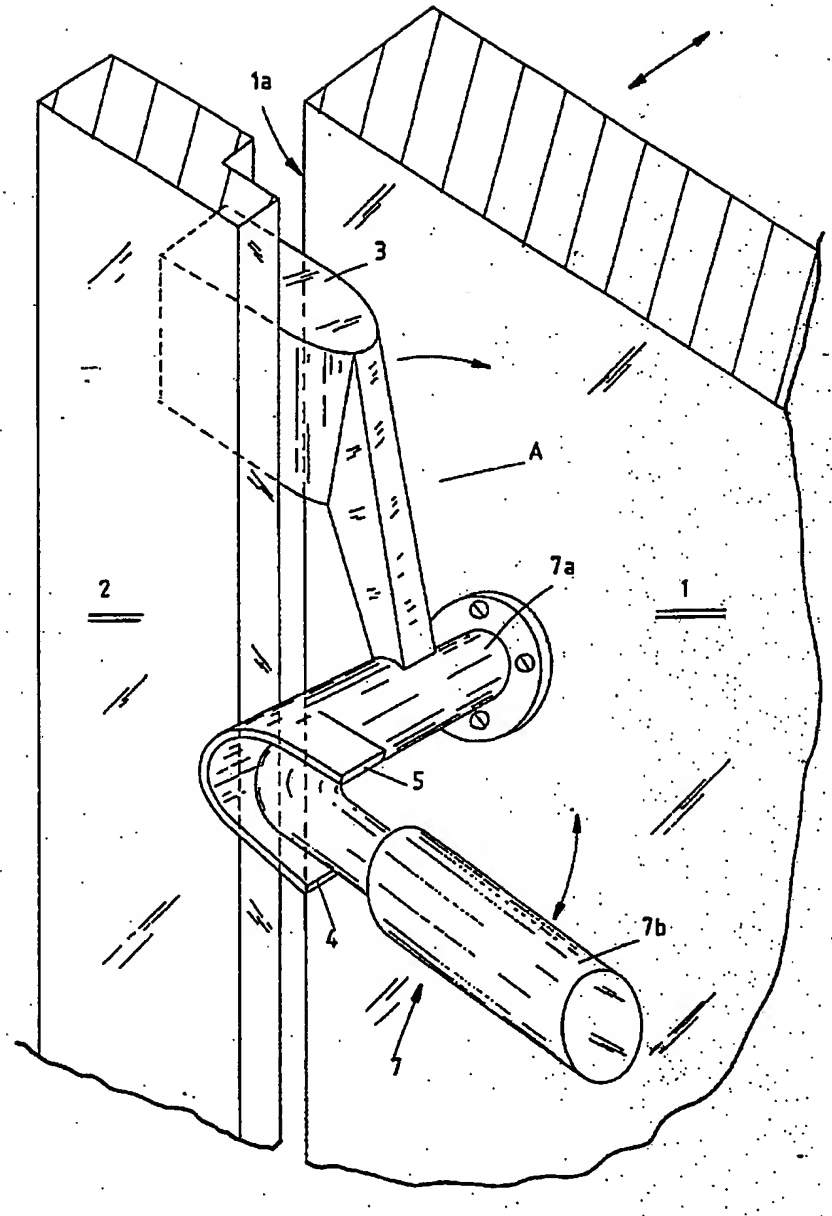

FIG. 1.

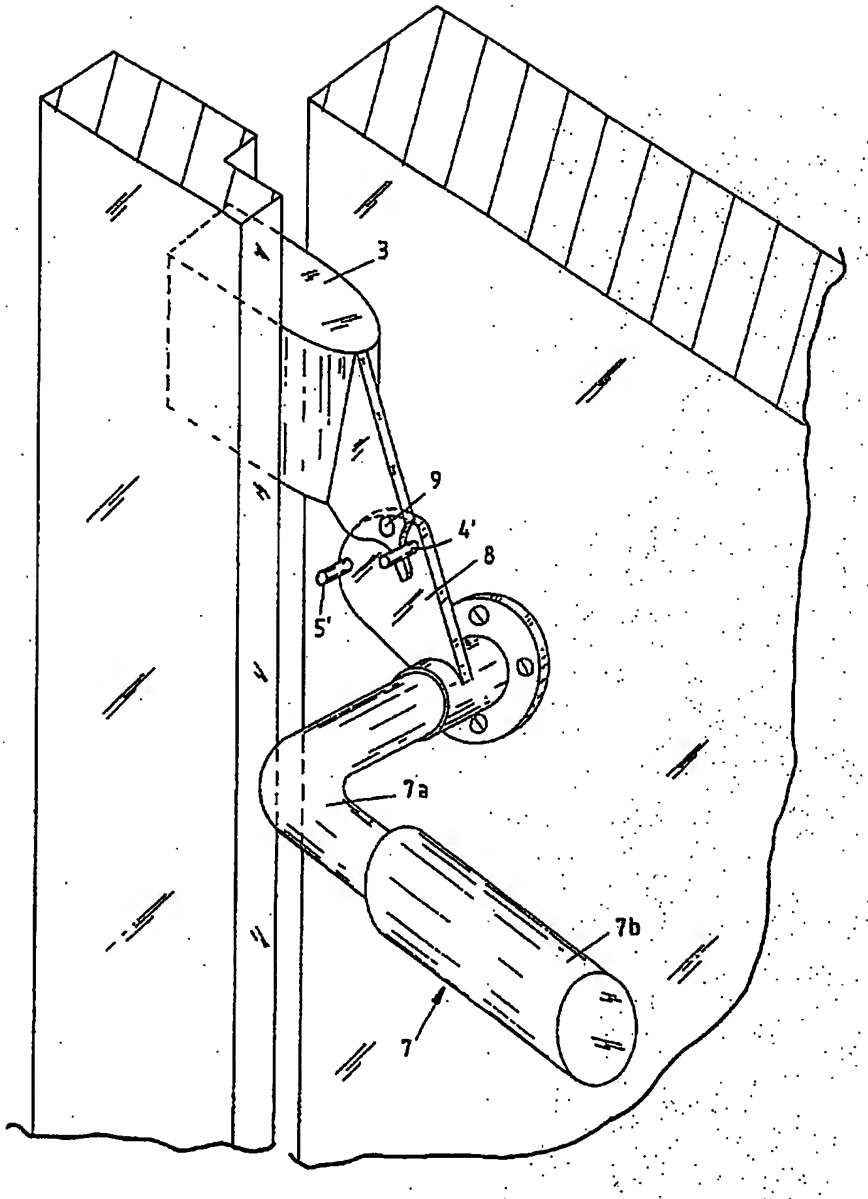

FIG. 2.

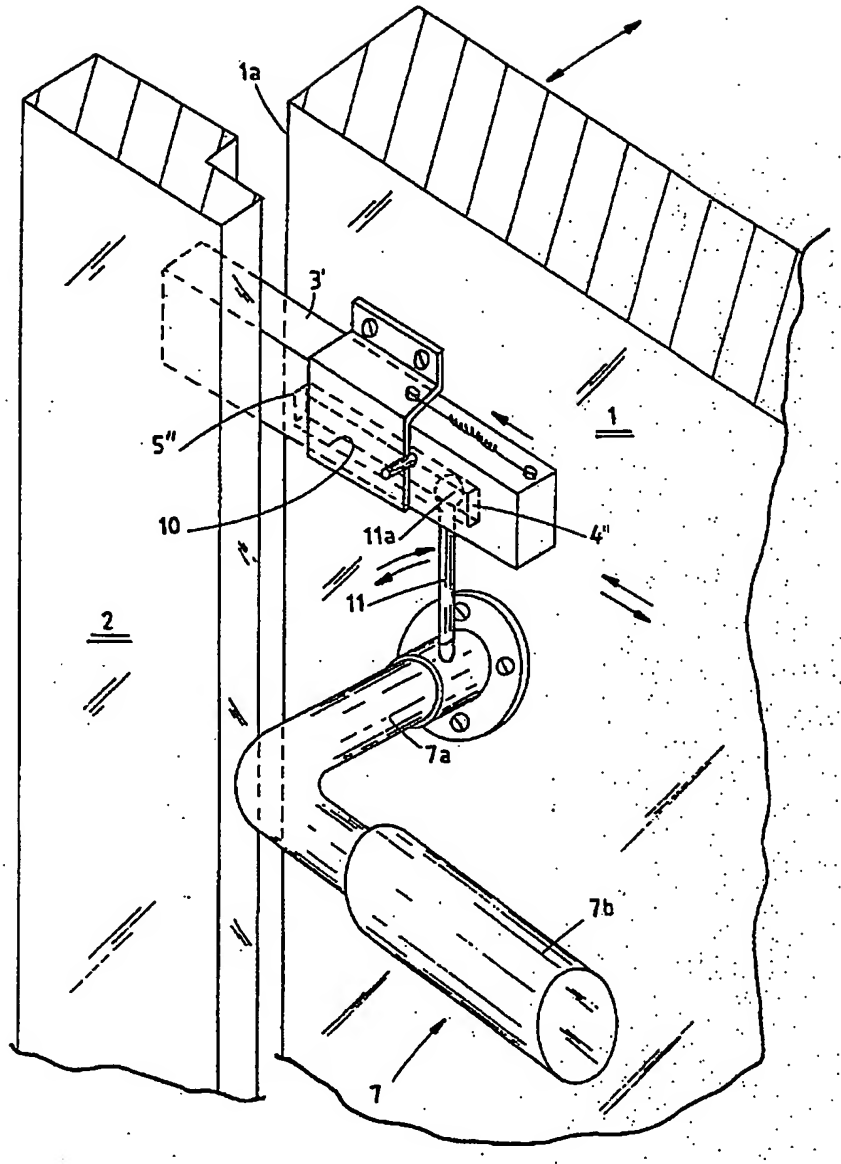

FIG. 3.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/NO 90/00148

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: E 05 F 5/02

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
IPC5	E 05 F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched[8]

SE,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X	DE, C, 249705 (W. SCHWARZHAUPT) 27 July 1912, see the whole document	1
X	DE, C, 249706 (W. SCHWARZHAUPT) 27 July 1912, see the whole document	1,3
Y		5
X	US, A, 1414286 (A. KELLER) 25 April 1922, see the whole document	1,4
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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
3rd January 1991	1991-01-04
International Searching Authority	**Signature of Authorized Officer**
SWEDISH PATENT OFFICE	Christer Wendenius

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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.PCT/ND 90/00148

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the Swedish Patent Office EDP file on 90-11-28
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-C- 249705	12-07-27	NONE	
DE-C- 249706	12-07-27	NONE	
US-A- 1414286	22-04-25	NONE	